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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,529	01/21/2004	Hugh M.L. Watson	118409	1112

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EXAMINER	
RAMDHANIE, BOBBY	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/760,529	WATSON ET AL.	
	Examiner	Art Unit	
	Bobby Ramdhanie, Ph.D.	1709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *23-31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☒ Claim(s) *15-22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :04/29/2004,02/20/2004,01/21/2004.

DETAILED ACTION

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-22, are drawn to a method of analysis of analyzing a temperature indicating paint using a marker paint, classified in class 422, subclass 56.

   II. Claims 23-31, are drawn to a chemical composition to a marker paint, classified in class 422, subclass 56.

During a telephone conversation with both Mr. Collier and Mr. Cady on 04/24/07 a provisional election was made with traverse to prosecute the invention of Application 10/760529, claims 1-22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 23-31 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

1. Claims 1- 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US6434267 B1), and in further in view of Bhardwaj et al (US5580172), Wasserman et al (US 5650461), Supcoe (US4311623) and Mar et al (US4131593).

Regarding claim 1, Smith teaches a method of analyzing a temperature indicating paint comprising applying an irreversible temperature indicating paint to a component of a machine (Column 1, lines 14-15), the irreversible temperature indicating paint having one or more changes of color at one or more temperatures (Column 1 lines 20-25), these color changes of the irreversible temperature indicating paint indicate the temperature to which the different parts of the component have been subjected (Column 1, lines 25-29), viewing the irreversible temperature indicating temperature paint to produce an image of the component (Column 1, lines 39-50), analyzing the component to determine if any debris and/or dirt has deposited on the irreversible temperature indicating paint to determine the temperature at different regions of the component (Column 7, lines 17-19). Smith does not teach however, a method comprising operating the machine for a predetermined period of time such that the component of the machine until it reaches its operating conditions, applying a marker paint to the component of the machine, a marker paint that does not change color, nor does Smith teach a method where analyzing the image of the irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account for the amount of any debris and/or dirt deposited onto the marker paint. Bhardwaj et al teaches a method comprising operating the machine until it reaches its operating conditions (Abstract), and Wasserman et al, and Supcoe both teach applying a marker paint to the component of the machine, a marker paint that does not change color which imparts an increase in the reflectivity at the thermal infra-red region while controlling the color in the visible range (Abstract), and (Column 1, lines 37-42), respectively. Bhardwaj et al and

Wasserman et al both teach that these coatings can be used for military applications or for cooling the hot surfaces of a gas turbine exhaust. Supcoe teaches that developing coatings (marker paints) with high infrared region and low reflectance in the visible region allow for reduction in surface heating, provides visual camouflage, and protection against infrared detection (Supcoe, Column 1, lines 30-35). For these reasons, it would have been obvious to view the marker paint on the component, to produce an image of the component and analyze the image of the component, and to determine if any debris and/or dirt has deposited on the marker paint.

1. Regarding Claim 2, Smith teaches a method as in Claim 1 comprising analyzing that part of the image corresponding to the irreversible (Column 1, lines 9-15) temperature indicating paint (Column 4, lines 60-70) and determining the colors of the irreversible temperature indicating paint at different positions from a store of the known colors for that particular irreversible temperature indicating paint (Column 5 lines 0-40). Smith does not teach a method comprising operating the machine for a predetermined period of time such that the component of the machine until it reaches its operating conditions, applying a marker paint to the component of the machine, a marker paint that does not change color, nor does Smith teach a method where analyzing the image of the irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account for the amount of any debris and/or dirt deposited onto the marker paint. Bhardwaj et al teaches a method comprising operating the machine until it reaches its operating conditions (Abstract), and Wasserman et al, teaches a marker paint that does not change color (Column 2 lines 25-30). It would

have been obvious to one of ordinary skill in the art at the time the invention was made to modify Smith with Wasserman et al or Supcoe because doing so would give a method of analyzing both the irreversible temperature indicating paint and the marker paint.

2. For Claim 3, Smith teaches a method as in claim 1 comprising analyzing the color of that part of the image corresponding to the irreversible temperature indicating paint and comparing the color of that part of the image corresponding to the irreversible temperature indicating paint with a stored color of the irreversible temperature indicating paint to determine if there is a difference in color (Column 2, lines 60-65). Smith does not teach the use of a marker paint. Supcoe teaches the use of a marker paint (stable opaque coating that has the ability to offer visual camouflage (Column 1, lines 33-35)). It would have been obvious to one of ordinary skill at the time the invention was made to combine these teachings because Smith teaches the method of analysis and according to Supcoe, cooling of very hot surfaces such as gas turbines is essential in modern warfare, and infrared detection techniques have become highly developed and means for counter-detection techniques are accordingly required (Column 1, lines 19-23).

3. For Claim 4, Smith teaches a method as in Claim 1, adjusting the temperature allocated to the different positions on the irreversible temperature indicating paint (Column 1, lines 14-17). Smith does not teach a method comprising operating the machine for a predetermined period of time such that the component of the machine until it reaches its operating conditions, applying a marker paint to the component of the machine, a marker paint that does not change color, nor does Smith teach a method

where analyzing the image of the irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account for the amount of any debris and/or dirt deposited onto the marker paint. Bhardwaj et al teaches a method comprising operating the machine until it reaches its operating conditions (Abstract), and Wasserman et al, and Supcoe both teach applying a marker paint to the component of the machine, a marker paint that does not change color which imparts an increase in the reflectivity at the thermal infra-red region while controlling the color in the visible range (Abstract), and (Column 1, lines 37-42), respectively. It would have been obvious to one skilled in the ordinary art to modify Smith with Bhardwaj et al, Wasserman et al, and Supcoe because this would develop a method for analysis.

4. For Claim 5, Smith teaches the viewing of the component using a boroscope (Column 7, lines 40-45). Smith does not teach a method comprising operating the machine for a predetermined period of time such that the component of the machine until it reaches its operating conditions, applying a marker paint to the component of the machine, a marker paint that does not change color, nor does Smith teach a method where analyzing the image of the irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account for the amount of any debris and/or dirt deposited onto the marker paint. Bhardwaj et al teaches a method comprising operating the machine until it reaches its operating conditions (Abstract), and Wasserman et al, and Supcoe both teach applying a marker paint to the component of the machine, a marker paint that does not change color which imparts an increase in the reflectivity at the thermal infra-red region while controlling the color in the

visible range (Abstract), and (Column 1, lines 37-42), respectively. It would have been obvious to one skilled in the ordinary art to modify Smith with Bhardwaj et al, Wasserman et al, and Supcoe because this would develop a method for analysis.

5. Regarding Claims 6-8, Smith teaches a method of analyzing an irreversible temperature indicating paint. Smith does not teach a method comprising operating the machine for a predetermined period of time such that the component of the machine until it reaches its operating conditions, applying a marker paint to the component of the machine, a marker paint that does not change color, a method where analyzing the image of the irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account for the amount of any debris and/or dirt deposited onto the marker paint, or viewing the component using a camera, a digital camera, or a CCD camera. Bhardwaj et al teaches a method comprising operating the machine until it reaches its operating conditions (Abstract) and teaches viewing the component using a camera, a digital camera, and a CCD camera (Column 4, lines 21-22). The Sony XC-77 Monochrome is commonly known to be a type of camera, type of digital camera, as well as a CCD camera. Wasserman et al, and Supcoe both teach applying a marker paint to the component of the machine, a marker paint that does not change color which imparts an increase in the reflectivity at the thermal infra-red region while controlling the color in the visible range (Abstract), and (Column 1, lines 37-42), respectively. It would have been obvious to one skilled in the ordinary art to modify Smith with Bhardwaj et al, Wasserman et al, and Supcoe because this would develop a method for analysis.

6. For Claim 9, Smith teaches the method of applying a plurality of irreversible temperature indicating paints to the component, each irreversible temperature indicating paint having changes of color at different temperatures to each of the other irreversible temperature indicating paints (Column 5, lines 65-68; Column 6, lines 0-20). Smith does not teach however, a method comprising operating the machine for a predetermined period of time such that the component of the machine until it reaches its operating conditions, applying a marker paint to the component of the machine, a marker paint that does not change color, nor does Smith teach a method where analyzing the image of the irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account for the amount of any debris and/or dirt deposited onto the marker paint. Bhardwaj et al teaches a method comprising operating the machine until it reaches its operating conditions (Abstract), and Wasserman et al, and Supcoe both teach applying a marker paint to the component of the machine, a marker paint that does not change color which imparts an increase in the reflectivity at the thermal infra-red region while controlling the color in the visible range (Abstract), and (Column 1, lines 37-42), respectively. It would have been obvious to one skilled in the ordinary art to modify Smith with Bhardwaj et al, Wasserman et al, and Supcoe because this would develop a method for analysis.

7. For Claim 10, Smith teaches a method of color-temperature banding for the irreversible temperature indicating paint (Column 5 & 6; lines 65-70 and 0-5 respectively). Smith does not teach color-temperature banding for the marker paint, a method comprising operating the machine for a predetermined period of time such that

the component of the machine until it reaches its operating conditions, applying a marker paint to the component of the machine, a marker paint that does not change color, nor does Smith teach a method where analyzing the image of the irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account for the amount of any debris and/or dirt deposited onto the marker paint. Bhardwaj et al teaches a method comprising operating the machine until it reaches its operating conditions (Abstract), and Wasserman et al, and Supcoe both teach applying a marker paint to the component of the machine, a marker paint that does not change color which imparts an increase in the reflectivity at the thermal infra-red region while controlling the color in the visible range (Abstract), and (Column 1, lines 37-42), respectively. Wasserman et al also teaches a paint that has qualities of the marker paint in the present application. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use color-temperature banding for the marker paint as well because according to Smith typical thermal paints have a complexity of color curves and existing thermal paints are ambiguous in temperature when three colors or wavelengths are measured (Column 6; lines 4-8). It would have been obvious to one skilled in the ordinary art to develop a method for analysis.

8. For Claims 11-13, Smith teaches a method of analysis for an irreversible temperature indicating paint. Both Smith and Bhardwaj et al teach the paint can be used for a machine comprising a gas turbine engine (Column 1, lines 14-15, and Column 1, line 29 respectively), turbine vane or blade (Bhardwaj et al, Column 2, line 11), or viewing the component while the component is in the machine (Bhardwaj et al, Claim 1).

Smith does not teach however, a method comprising operating the machine for a predetermined period of time such that the component of the machine until it reaches its operating conditions, applying a marker paint to the component of the machine, a marker paint that does not change color, nor does Smith teach a method where analyzing the image of the irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account for the amount of any debris and/or dirt deposited onto the marker paint. Bhardwaj et al teaches a method comprising operating the machine until it reaches its operating conditions (Abstract), and Wasserman et al, and Supcoe both teach applying a marker paint to the component of the machine, a marker paint that does not change color which imparts an increase in the reflectivity at the thermal infra-red region while controlling the color in the visible range (Abstract), and (Column 1, lines 37-42), respectively. It would have been obvious to one skilled in the ordinary art to modify Smith with Bhardwaj et al, Wasserman et al, and Supcoe because this would develop a method for analysis.

9. For Claim 14, Smith teaches a method of analysis for an irreversible thermal indicating paint. Smith does not teach however, a method wherein in the marker paint comprises a pigment, a binder, and a solvent, and the pigment comprising cobalt titanium oxide, titanium nickel antimony oxide, cobalt aluminum oxide or cadmium sulphide selenium, a method comprising operating the machine for a predetermined period of time such that the component of the machine until it reaches its operating conditions, applying a marker paint to the component of the machine, a marker paint that does not change color, nor does Smith teach a method where analyzing the image

of the irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account for the amount of any debris and/or dirt deposited onto the marker paint. Wasserman et al teaches a marker paint comprises a pigment, a binder, and a solvent, the pigment (Column 2, lines 30-40), the pigment comprising cobalt titanium oxide, titanium nickel antimony oxide, cobalt aluminum oxide (Column 3, lines 10-15), or cadmium sulphide selenium. Mar et al teaches that the pigment can be cobalt titanium oxide (Column 2, lines 20-25). Bhardwaj et al teaches a method comprising operating the machine until it reaches its operating conditions (Abstract), and Wasserman et al, and Supcoe both teach applying a marker paint to the component of the machine, a marker paint that does not change color which imparts an increase in the reflectivity at the thermal infra-red region while controlling the color in the visible range (Abstract), and (Column 1, lines 37-42), respectively. It would have been obvious to one skilled in the ordinary art to modify Smith with Bhardwaj et al, Wasserman et al, and Supcoe because this would develop a method for analysis.

Allowable Subject Matter

10. Claims 15-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: there are no prior art records to date, of these specific paint compositions for the marker paint.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bobby Ramdhanie, Ph.D. whose telephone number is 571-270-3240. The examiner can normally be reached on Mon-Fri 8-5 (Alt Fri off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BR

Walter D. Griffin

WALTER D. GRIFFIN
SUPERVISORY PATENT EXAMINER